Space Weather Forecast

Issued on Saturday, 23 October 2021 at 01:28 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Slight chance of Moderate class flares. Otherwise no significant activity expected.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Very Low, but background flux has increased today with the arrival of a new, large sunspot group over the southeast limb. This is one of two numbered sunspot regions on the visible disc and appears to have a rather complex magnetic configuration. The other region is a magnetically simple, stable sunspot in the southeast quadrant, approaching the meridian. An area of plage in the northeastern quadrant has occasionally shown signs of spot development, but is still too faint to be classified at this time.

A weak Coronal Mass Ejection (CME) was visible in coronagraph imagery from the southwest quadrant. This is currently being processed by Enlil to see if it Earth-directed. Otherwise, no Earth-directed CMEs were evident in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind has declined from elevated to slightly elevated levels during the period, with a peak of 501km/s at 22/0001 UTC. The magnetic properties of the solar wind at Earth have been weak and unfavourable for geomagnetic storming, with the resultant geomagnetic activity remaining Quiet (Kp 0-2) through the last 24 hours.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be at Low or Very low levels, but with a slight chance of Moderate-class flares (20%). The elevated probabilities result from a large sunspot region close to the southeast limb and also a number of other groups expected to rotate onto the Earth-facing disc in the coming days.

Solar Wind / Geomagnetic Activity: The solar wind is currently slightly elevated due to connection with a high speed stream, but is waning to slow-ambient levels in the coming days. No new high speed streams are expected during the period. Geomagnetic activity is very likely to be Quiet through the next four days (Kp 0-2).

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	20	20	20
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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